

## CHAPTER 13. HYPOVOLEMIC SHOCK, SELF-ASSESSMENT QUESTIONS

1. Which of the following is the key goal of therapy in the first hour of hypovolemic shock?
  - A. MAP greater than 90 mm Hg
  - B. SBP greater than 90 mm Hg
  - C. SBP greater than 60 mm Hg
  - D. Hematocrit is at least 30% (0.30) using transfusions
  - E. Normalization of urine output and base deficit
  
2. What should be the first pharmacologic/fluid intervention in an adult patient with an SBP less than 90 mm Hg or MAP less than 60 mm Hg?
  - A. Administer 2 units of Type O PRBCs
  - B. Administer 1000 to 2000 mL of 0.9% NaCl or LR
  - C. Begin dopamine or norepinephrine infusion
  - D. Administer 5% albumin infusion
  - E. Begin stress ulcer prophylaxis and antithrombotic therapy
  
3. What is the primary reason that hetastarch products are no longer recommended for initial resuscitation in hypovolemic shock?
  - A. Crystalloids clearly result in lower mortality
  - B. Hetastarch has a higher risk of infections
  - C. Hetastarch is more effective but avoided due to high cost
  - D. Hetastarch is associated with acute kidney injury
  - E. Crystalloids require a smaller administration volume

4. What potential adverse event requires caution if using dextran in hemorrhagic hypovolemic shock?
  - A. Hemolytic reaction
  - B. Risk of infection from contamination
  - C. Drug-induced pancreatitis
  - D. Inhibition of the coagulation cascade
  - E. Electrolyte abnormalities
  
5. What are some primary indications for whole blood/PRBC administration in the acute resuscitation phase in adults?
  - A. All patients should receive 2 units of Type O PRBCs
  - B. Blood losses exceeding 750 mL or ongoing bleeding
  - C. Blood losses exceeding 1500 mL or ongoing bleeding
  - D. Administer in patients with a PA catheter and vasopressors
  - E. Administer in all patients requiring mechanical ventilation
  
6. When should a norepinephrine infusion be started?
  - A. Only in patients with hemorrhagic hypovolemic shock
  - B. In all patients with hypovolemic shock
  - C. If patient's BP responds well to the initial fluid bolus
  - D. In all patients who require Type O PRBCs
  - E. If there is evidence of cerebral or myocardial ischemia
  
7. What is the reason why norepinephrine is generally recommended as the first choice vasopressor over dopamine or epinephrine in patients with hypovolemic shock?

- A. Lower mortality
  - B. Lower costs
  - C. Fewer tachyarrhythmias
  - D. More inotropic activity
  - E. More powerful BP elevation
8. A patient with a history of severe heart failure is in hypovolemic shock from massive gastrointestinal fluid losses. The patient's BP is improving with fluids and dopamine 25 mcg/kg/min, but his cardiac index is 1.8 L/min/m<sup>2</sup> (0.03 L/s/m<sup>2</sup>) and PAOP is 18 mm Hg. What should be done to improve cardiac index?
- A. Administer 2 L of normal saline over 1 hour
  - B. Start dobutamine infusion
  - C. Administer 5 mL/kg of hetastarch
  - D. Administer 2 units of Type O PRBCs
  - E. Intubate patient and start mechanical ventilation
9. A patient with a history of type 2 diabetes, uncontrolled hypertension, and rheumatoid arthritis is in hypovolemic shock from bleeding after a lawnmower accident. Home medications include metoprolol 100 mg twice daily, hydrochlorothiazide 25 mg daily, amlodipine 10 mg daily, metformin 500 mg twice daily, and prednisone 20 mg daily. Which of the following drug-related issues is most likely to contribute to hypotension over the next few days?
- A. Long-acting antihypertensive effects of metoprolol
  - B. Long-acting antihypertensive effects of amlodipine

- C. Hypovolemia exacerbated by previous hydrochlorothiazide use
  - D. The risk of metformin-associated metabolic acidosis
  - E. Adrenal suppression from using systemic prednisone
10. Which of the following is an important goal of therapy at 24 hours after the onset of hypovolemic shock that may improve mortality?
- A. Normalization of blood pressure and heart rate
  - B. Normalization of urine output and base deficit
  - C. Discontinuation of vasopressors and inotropes
  - D. Ensuring the hematocrit is at least 30% (0.30)
  - E. Normalization of body and skin temperature
11. What should be done for a patient who is still hypotensive (MAP 50 mm Hg) after an initial bolus of 2000 mL of LR, 2 units of PRBCs (current hematocrit 32% [0.32]), and norepinephrine at 2 mcg/min?
- A. Administer 1000 to 2000 mL of NS or LR
  - B. Increase norepinephrine to 4 mcg/min
  - C. Add dobutamine at 10 mcg/kg/min
  - D. Give 2 more units of PRBCs
  - E. Begin stress ulcer prophylaxis and antithrombotic therapy
12. A patient who presented with hypovolemic shock and confusion from severe vomiting and diarrhea has received a total of four liters of LR over the past 3 hours. Her mental status is back to normal and her current vital signs are BP 95/65 mm Hg, HR 93, RR 14. What is the most appropriate treatment at this time?
- A. Administer 1000 to 2000 mL of IV lactated Ringer

- B. Begin norepinephrine IV infusion at 2 mcg/min
  - C. Continue to monitor, no fluids or vasopressors needed
  - D. Administer 5 to 10 mL/kg of Type O negative PRBCs
  - E. Place a pulmonary artery catheter for more intensive monitoring
13. A patient with hemorrhagic hypovolemic shock has responded well to fluid resuscitation and no longer has signs of active bleeding. What is the most appropriate threshold for administering a transfusion of PRBCs at this time?
- A. Hemoglobin less than 7 g/dL (70 g/L or 4.34 mmol/L)
  - B. Hemoglobin less than 8.5 g/dL (85 g/L or 5.3 mmol/L)
  - C. Hemoglobin less than 10 g/dL (100 g/L or 6.2 mmol/L)
  - D. Platelets less than  $20 \times 10^3/\text{mm}^3$  ( $20 \times 10^9/\text{L}$ )
  - E. If the patient has ongoing organ dysfunction
14. Which statement is true regarding the use of recombinant activated factor VII (rFVIIa) for hemorrhagic hypovolemic shock?
- A. Provides clinical benefits if given within 3 hours of the onset of bleeding
  - B. Should not be used because of concerns about cost and thromboembolic events
  - C. Should only be used in patients who require blood transfusions
  - D. Decreases mortality in patients with, or at risk of, significant bleeding
  - E. Should not be used because of increased mortality, especially in older patients
15. Based on a recent clinical trial, which of the following represents the most appropriate use of tranexamic acid as an adjunctive antifibrinolytic agent in hypovolemic shock?
- A. All trauma patients regardless of blood loss and timing
  - B. Within 3 hours in all trauma patients with shock

- C. In all trauma patients who require blood transfusions
- D. In all trauma patients with significant bleeding
- E. Within 3 hours in trauma patients with significant bleeding

## ANSWERS

1. B

2. B

3. D

4. D

5. C

6. E

7. C

8. B

9. E

10. B

11. A

12. C

13. A

14. B

15. E